



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---|------------------|
| 10/552,087 | 10/04/2005 | Dongping Tao | 434B-291 | 4135 |
| 1009 7590 KING & SCHICKLI, PLLC 247 NORTH BROADWAY LEXINGTON, KY 40507 | | 09/21/2011 | <div>EXAMINER</div> <div>TAL XIUNYU</div> <div>ART UNIT PAPER NUMBER</div> <div>1759</div> <div>MAIL DATE DELIVERY MODE</div> <div>09/21/2011 PAPER</div> | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/552,087

Applicant(s)

TAO ET AL.

Examiner

XIUJU TAI

Art Unit

1759

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-6,8,10,11,22-26,28-30 and 32-37 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-6,8,10,11,22-26,28-30 and 32-37 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-893)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

1. In view of the appeal brief filed on 7/5/2011, PROSECUTION IS HEREBY REOPENED. New ground rejections are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Jeffrey T Barton/

Supervisory Patent Examiner, Art Unit 1759

Response to Arguments

2. Applicant's arguments, with respect to claim 35 under 35 U.S.C. 112 first paragraph have been fully considered and are persuasive. The rejection has been withdrawn.

Claim Objections

3. Claim 25 is objected to because of the following informalities: claim 25 appears to depend upon claim 24 where "a partition" is recited. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 34 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 34 recites the limitation of "the outer surface of the rotor is smooth". The instant specification discloses that outer surface of the rotor remains non-permeable or continuous (see page 9). From the drawings, the rotor appears to be made from a material that has smooth surface (see Figures 2, & 4) and the rotor is formed into various shapes, including a gear shape, a polygonal shape, and a circular shape (see Figure 4, page 9). From the drawings of the instant specification,

- a. in Figure 4a, the surface on each projection, each recess, and end side of rotor appears to be smooth, but the rotor has a shape of gear (i.e. not a smooth shape);
- b. in Figure 4b, the surface on each side and end side of polygon-shaped rotor appears to be smooth, but the rotor has a plurality of corners (i.e. not a smooth shape);

- c. in Figure 4c, the surface of the circular rotor appears to be smooth and the rotor has a round shape (i.e. a smooth shape).

Since the instant specification does not clearly define what the applicants regard as "the outer surface of the rotor is smooth". It is not clear if the smooth surface is referred to the material of the rotor or the shape of the rotor. Therefore, appropriate correction/clarification is required. For the purpose of examination, the limitation will be broadly interpreted "the outer surface of the rotor is continuous/non-permeable/non-porous" in light of the instant specification.

7. Claim 37 recites the limitation of "the rotor does not include any external blades". This negative limitation renders the claim indefinite because it is an attempt to claim the invention by excluding what the inventors did not invent rather than distinctly and particularly pointing out what they did invent. If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims (see MPEP 2175). Therefore, the negative limitation cited in claim 37 is indefinite.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-6, 8, 10, 11, 22-26, 28-30, and 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maehata et al (WO 00/76669, the references are made to U.S. 6,426,474 as English translation of the equivalent document) in view of Gellert et al (U.S. 5,288,305).

12. Regarding claim 1, Maehata et al disclose an apparatus for separating plastic (ABSTRACT). The apparatus comprises a frictional charging device 3, which includes:

- (1) a container 11 (i.e. a chamber) having an intake port 14 (i.e. an inlet) and an unloading port 16 (i.e. an outlet, Figure 2, col. 3, line 53-60); and
- (2) a rotation shaft 18 having metal rod members 19 mounted in the container 11 (Figure 2, col. 3, line 66), wherein the outer surface of the rotation shaft 18 and the rod members 19 appears to be non-permeable (Figure 2) and the plastic pieces 1 are

rubbed each other and agitated in the frictional charging device 3 to effect charging of the plastic pieces (col. 1, line 6-67 & col. 4, line 1-5).

Maehata does not teach an electric field in the chamber for enhancing the charging of the particles. However, Gellert et al disclose an apparatus for charging particles. Gellert teaches that a tribo-charger /friction charger 2 consists of a grounded metal tube 11 and a first electrode 12 of an additional electric field (Figure 3, col. 1, line 13-15 & col. 3, line 28-39). Gellert further indicates that the additional electric field in the friction charger improves charging efficiency (col. 2, line 14-19). Therefore, it would be obvious for one having ordinary skill in the art to include an electric field as suggested by Gellert in order to improve charging efficiency of Maehata.

It should be noted that Gellert points out that particles are charged in a friction charger by collisions with solid bodies, which is known as a tribo-charger (col. 1, line 13-15). The instant specification describes that tribo-charging is achieved by contacting charging and friction charging (see pages 2 & 6). Since the plastic pieces 1 of Maehata are rubbed each other and agitated in the frictional charging device 3 to effect charging of the plastic pieces (col. 1, line 6-67 & col. 4, line 1-5), Maehata inherently teaches a tribo-charger (i.e. the friction charging device) and the rotation shaft 18 with rod members 19 is a tribo-charger rotor.

13. Regarding claim 2, the rotation shaft 18 of Maehata has rod members 19 (i.e. non-circular cross section, Figure 2, 6, & 7, col. 3, line 66-67).

14. Regarding claim 3, Maehata teaches that the rotation shaft 18 is concentrically positioned within the container 11, forming an annular space to receive plastic piece 1 (Figure 2, 6, & 7).

15. Regarding claim 4, the unloading port 16 is positioned below and opposite the intake port 14 (Figure 2, col. 3, line 58-60).

16. Regarding claim 5, Maehata teaches that auxiliary agitation members 27 are extended to the rotation shaft 18 within the container 11 (Figure 7, col. 8, line 19-23). The auxiliary agitation members 27 promote frictional charging plastic pieces 1 before the plastic pieces are discharged from the port 16 (col. 8, line 44-59). Since the device Maehata/Gellert comprises substantially the same structure as claimed, it is fully capable of performing the claimed functions.

It should be noted that the recitation that an element is sufficient to perform a given function is not a positive limitation but only required the ability to perform so. It does not constitute a limitation in any patentable sense (see MPEP 2144).

17. Regarding claim 6, Maehata teaches that auxiliary agitation members 27 are extended to the rotation shaft 18 within the container 11 (Figure 7, col. 8, line 19-23) and the surface area of the members 27 corresponds to the total surface area of auxiliary charging material 21 (col. 8, line 50-53). One having ordinary skill in the art would have realized to adjust the distance between the member 27 and the rotation shaft in order to adjust the total surface area, thus improving charging efficiency of Maehata/Gellert. Furthermore, it has been held that provision of adjustability, where needed, involves only routine skill in the art (see MPEP 2144).

18. Regarding claim 8, the rotating speed is considered as an operating parameter of the device and manner operating the device does not differentiate apparatus claim (MPEP 2114).

19. Regarding claim 10, Gellert teaches that the electric field is created from a voltage source by connecting a first lead to the first electrode 12 and a second lead to the grounded metal tube 11 on the wall of the chamber (Figures 3, col. 3, col. 3, line 28-39), but Maehata/Gellert does not explicitly teach to connect the first lead to the rotor. However, since the rotation shaft 18 is co-axially positioned within the container 11 of Maehata and the first electrode 12 of Gellert is concentrically positioned within the chamber (Figure 3), one having ordinary skill in the art would immediately have envisioned to connect the first lead to the rotor in order to generate the electric field between the concentric rotor and the container for improving charging efficiency of Maehata/Gellert.

20. Regarding claim 11, Maehata teaches that a hopper 2 is used for introducing plastic pieces 1 (Figure 2, col. 3, line 36-37) and plastic pieces 1 coming out from the unloading port 16 are separated by drum electrode 5 and high-voltage electrode 6 (Figure 1, col. 1, line 44-61).

21. Regarding claim 34, the rotation shaft 18 and the rod members 19 of Maehata have smooth and continuous/non-permeable surface (Figure 2, 6, & 7).

22. Regarding claim 35, the rotation shaft 18 of Maehata comprises a cylinder (Figure 2).

23. Regarding claim 36, the rotation shaft 18 of Maehata is mounted along the horizontal axis of the container 11 (Figure 2)

24. Regarding claim 37, the rotation shaft 18 does not include any external blades (Figure 2).

25. Regarding claim 22, Maehata et al disclose an apparatus for separating plastic (ABSTRACT). The apparatus comprises a frictional charging device 3, which includes:

(1) a container 11 with wall (i.e. a wall forming a chamber) having an intake port 14 (i.e. an inlet) and an unloading port 16 (i.e. an outlet, Figure 2, col. 3, line 53-60); and

(2) a rotation shaft 18 having metal rod members 19 mounted in the container 11 (Figure 2, col. 3, line 66), wherein the outer surface of the rotation shaft 18 and the rod members 19 appears to be non-permeable (Figure 2) and the plastic pieces 1 are rubbed each other and agitated in the frictional charging device 3 to effect charging of the plastic pieces (col. 1, line 6-67 & col. 4, line 1-5).

Maehata does not teach an electric field in the chamber for enhancing the charging of the particles. However, Gellert et al disclose an apparatus for charging particles. Gellert teaches that a tribo-charger /friction charger 2 consists of a grounded metal tube 11 and a first electrode 12 (Figure 3, col. 1, line 13-15 & col. 3, line 28-39). Gellert further indicates that the additional electric field in the friction charger improves charging efficiency (col. 2, line 14-19). Therefore, it would be obvious for one having ordinary skill in the art to include an electric field as suggested by Gellert in order to improve charging efficiency of Maehata.

It should be noted that Gellert points out that particles are charged in a friction charger by collisions with solid bodies, which is a tribo-charger (col. 1, line 13-15). The instant specification describes that tribo-charging is achieved by contacting charging and friction charging (see page 2). Since the plastic pieces 1 of Maehata are rubbed each other and agitated in the frictional charging device 3 to effect charging of the plastic pieces (col. 1, line 6-67 & col. 4, line 1-5), Maehata inherently teaches a tribo-charger (i.e. the friction charging device) and the rotation shaft 18 with rod members 19 is a tribo-charger rotor.

Claim recites the limitation of "rotatable means for frictionally charging particles". This limitation invokes 35 U.S.C. 112, sixth paragraph (see MPEP 2181). Rotatable means for frictionally charging the particles is defined as a rotor in the instant specification. The charging fan rotor 34 is an equivalent structure to a rotor. Therefore, the rotation shaft of Maehata is an equivalent structure to "rotatable means for frictionally charging the particles".

Claim recites the limitation of "means for forming an electric field". This limitation invokes 35 U.S.C. 112, sixth paragraph (see MPEP 2181). Means for forming an electric field is defined as an external voltage source for charging the particles in the instant specification. Therefore, the ground tube 11 on the wall and the first electrode 12 of Gellert is an equivalent structure to "means for forming an electric field".

26. Regarding claim 23, Maehata teaches that a rotation shaft 18 is mounted within the container 11 (Figure 2, col. 3, line 66-67), wherein the outer surface of the rotation shaft 18 and the rod members 19 appears to be non-permeable (Figure 2).

27. Regarding claim 24, Maehata teaches that auxiliary agitation members 27 are extended to the rotation shaft 18 within the container 11 (Figure 7, col. 8, line 19-23). The auxiliary agitation members 27 promote frictional charging plastic pieces 1 before the plastic pieces are discharged from the port 16 (col. 8, line 44-59). Since the device Maehata/Gellert comprises substantially the same structure as claimed, it is fully capable of performing the claimed functions.

It should be noted that the recitation that an element is sufficient to perform a given function is not a positive limitation but only required the ability to perform so. It does not constitute a limitation in any patentable sense (see MPEP 2144).

28. Regarding claim 25, Maehata teaches that auxiliary agitation members 27 is extended to the rotation shaft 18 within the container 11 (Figure 7, col. 8, line 19-23) and the surface area of the members 27 corresponds to the total surface area of auxiliary charging material 21 (col. 8, line 50-53). One having ordinary skill in the art would have realized to adjust the distance between the member 27 and the rotation shaft in order to adjust the total surface area, thus improving charging efficiency of Maehata/Gellert. Furthermore, it has been held that provision of adjustability, where needed, involves only routine skill in the art (see MPEP 2144).

29. Regarding claim 26, Maehata teaches a driving motor 20 is used for rotating the rotation shaft 18 (col. 4, line 3-5).

30. Regarding claim 28, Gellert teaches that the electric field is created from a voltage source by connecting a first lead to the first electrode 12 and a second lead to the grounded metal tube 11 on the wall of the chamber (Figures 3, col. 3, col. 3, line 28-

39), but Maehata/Gellert does not explicitly teach to connect the first lead to the rotor. However, since the rotation shaft 18 is co-axially positioned within the container 11 of Maehata and the first electrode 12 of Gellert is concentrically positioned within the chamber (Figure 3), one having ordinary skill in the art would immediately have envisioned to connect the first lead to the rotor in order to generate the electric field between the concentric rotor and the container for improving charging efficiency of Maehata/Gellert.

31. Regarding claim 29, Maehata teaches that a hopper 2 is used for introducing plastic pieces 1 (Figure 2, col. 3, line 36-37) and plastic pieces 1 coming out from the unloading port 16 are separated by drum electrode 5 and high-voltage electrode 6 (Figure 1, col. 1, line 44-61).

32. Regarding claims 30 and 33, Maehata et al disclose an apparatus for separating plastic (ABSTRACT). The apparatus comprises a frictional charging device 3, which includes:

(1) a hopper 2 for introducing plastic pieces 1 (i.e. a feed-stream, Figure 2, col. 3, line 36-37)

(2) a container 11 with a wall (i.e. a wall forming a chamber) having an intake port 14 (i.e. an inlet) and an unloading port 16 (i.e. an outlet, Figure 2, col. 3, line 53-60); and

(3) a rotation shaft 18 having metal rod members 19 mounted in the container 11 (Figure 2, col. 3, line 66), wherein the outer surface of the rotation shaft 18 and the rod members 19 appears to be non-permeable (Figure 2) and the plastic pieces 1 are

rubbed each other and agitated in the frictional charging device 3 to effect charging of the plastic pieces (col. 1, line 6-67 & col. 4, line 1-5); and

(4) drum electrode 5 and high-voltage electrode 6 for separating plastic pieces 1 coming out from the unloading port 16 (i.e. an electrostatic separator, Figure 1, col. 1, line 44-61).

Maehata does not teach a first electric field in the chamber for enhancing the charging of the particles. However, Gellert et al disclose an apparatus for charging particles. Gellert teaches that a tribo-charger /friction charger 2 consists of a grounded metal tube 11 and a first electrode 12 (Figure 3, col. 1, line 13-15 & col. 3, line 28-39). Gellert further indicates that the additional electric field in the friction charger improves charging efficiency (col. 2, line 14-19). Therefore, it would be obvious for one having ordinary skill in the art to include an electric field as suggested by Gellert in order to improve charging efficiency of Maehata.

It should be noted that Gellert points out that particles are charged in a friction charger by collisions with solid bodies, which is a tribo-charger (col. 1, line 13-15). The instant specification describes that tribo-charging is achieved by contacting charging and friction charging (see page 2). Since the plastic pieces 1 of Maehata are rubbed each other and agitated in the frictional charging device 3 to effect charging of the plastic pieces (col. 1, line 6-67 & col. 4, line 1-5), Maehata inherently teaches a tribo-charger (i.e. the friction charging device) and the rotation shaft 18 with rod members 19 is a tribo-charger rotor.

33. Regarding claim 32, Maehata teaches that plastic pieces 1 coming out from the unloading port 16 are separated by drum electrode 5 and high-voltage electrode 6 (i.e. a second electric field, Figure 1 7 2, col. 1, line 44-61).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to XIUYU TAI whose telephone number is (571)270-1855. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Barton can be reached on 571-272-1307. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/X. T./
Examiner, Art Unit 1759

Application/Control Number: 10/552,087

Page 15

Art Unit: 1759

/Jeffrey T Barton/

Supervisory Patent Examiner, Art Unit 1759

16 September 2011